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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,317	09/29/2003	Robert Francis Bartfai	TUC920030119US1	5277

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EXAMINER

KRAVETS, LEONID

ART UNIT PAPER NUMBER

2189

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/675,317	<b>Applicant(s)</b> BARTFAI ET AL.	
	<b>Examiner</b> Leonid Kravets	<b>Art Unit</b> 2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***DETAILED ACTION***

**Response to Amendment**

1. This Office Action has been issued in response to amendment filed 15 February 2006. Claims 1-30 are pending. Applicant's arguments have been carefully and fully considered in light of the instant amendment, but are moot in view of the new ground(s) of rejection.

***Specification***

2. The objection to the specification is withdrawn due to amendment filed 15 February 2006.

***Claim Rejections - 35 USC § 112***

3. The previous rejection of claims 6-7, 16-17, 26-27 under 35 U.S.C. 112 has been withdrawn due to amendment filed 15 February 2006.
4. The previous rejection of claims 8, 18, 28 under 35 U.S.C. 112 has been withdrawn due to amendment filed 15 February 2006.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-5, 7-15, 17-25 and 27-30 are rejected under 35 U.S.C. 102(a)

as being anticipated by Ji (US Pub No 2004/0250029).

7. As per claim 1, Ji discloses a method for maintaining consistency of data, comprising:

copying one or more blocks of data identified by a first structure to form a consistent set of data from a primary site to a secondary site asynchronously (Fig 2, Paragraph 7, Lines 1-6); and

while not acknowledging completion of write requests to any blocks of data, creating a second structure [batches within a write queue (Paragraph 37, Lines 4-7 and Paragraph 40, Lines 3-5)], wherein the second structure indicates which blocks of data are modified while the consistent set of data is being formed [write transactions are the indicate which blocks of data they are modifying (Paragraph 40, Lines 3-5)], examiner interprets acknowledging to be between first and second sites, the write acknowledgments are not sent until after the batch is implemented in the secondary storage. (Paragraph 70, Lines 9-12)].

8. As per claim 2, Ji discloses the method of claim 1, further comprising:

after creating the second structure,  
allowing completion of write requests that had not been acknowledged  
[Once the send batch is created, it is put into queue to be sent to secondary storage  
(Paragraph 41, Lines 1-3)]; and  
processing new write requests, with modifications to blocks of data being  
recorded using the second structure [A new batch is created with the new write requests  
(Paragraph 40, Lines 8-10)].

9. As per claim 3, Ji discloses the method of claim 2, wherein the second structure includes indicators, and wherein each indicator indicates whether a corresponding block of data was modified while the consistent set of data is being formed [The second structure of Ji includes batches within a write queue (Paragraph 37, Lines 4-7 and Paragraph 40, Lines 3-5), the presence of a batch indicates the blocks within the batch have been modified (Paragraph 40, Lines 3-5)], further comprising:

receiving a new write request for a block of data (Paragraph 33, Lines 1-5); and  
if modifications to blocks of data are being recorded using the second structure and an indicator corresponding to the block of data is set in the first structure to indicate that the block of data is to be copied [Log indicates all write transactions, thus those that are to be copied are identified (Paragraph 33, Lines 1-5)

sending an image of the block of data in cache to remote storage  
(Paragraph 37, Lines 4-7 and Paragraph 41, Lines 1-3);

setting the corresponding indicator in the first structure to indicate that the

block is not to be copied [Once the write is performed, the log record is removed, thus this indicates that the block is not to be copied (Paragraph 54, Lines 14-16)]; and processing the new write request [The system must process the write request in order for it to be written anywhere, such as the log of Ji].

10. As per claim 4, Ji discloses the method of claim 2, wherein the second structure includes indicators, and wherein each indicator indicates whether a corresponding block of data was modified while the consistent set of data is being formed [The second structure of Ji includes batches within a write queue (Paragraph 37, Lines 4-7 and Paragraph 40, Lines 3-5), the presence of a batch indicates the blocks within the batch have been modified (Paragraph 40, Lines 3-5)] further comprising:

receiving a new write request for a block of data (Paragraph 33, Lines 1-5); and if modifications to blocks of data are being recorded using the second structure, an indicator corresponding to the block of data is set in the first structure to indicate that the block of data is to be copied [The batch is placed in the write queue (Paragraph 37, Lines 4-7)], and the block of data has a new image in cache, applying the new write request to the new image [In the Ji system, the write request would be applied to the newest batch (Paragraph 40, Lines 11-12)].

11. As per claim 5, Ji discloses the method of claim 4, further comprising:

if at least one of modifications to blocks of data are not being recorded using the second structure and the indicator corresponding to the block of data is not set in the first structure to indicate that the block of data is to be copied, processing the new write request normally [A mirroring system requires the administrator to select areas to be mirrored, thus the write requests for data not mirrored would be processed normally].

12. As per claim 7, Ji discloses the method of claim 4, further comprising:

sending an image of a block of data in the cache to remote storage (Paragraph 41, Lines 1-3); and

if modifications to blocks of data are being recorded using the second structure and the block of data has an image in the cache,

discarding the image in the cache[Once the batch is sent over to the secondary storage of Ji, the batch is removed and thus the image is discarded within the cache]

setting the corresponding indicator in the first structure to indicate that the block is not to be copied [The record would be removed from the log, indicating the block is not to be copied (Paragraph 54, Lines 14-16)].

13. As per claim 8, Ji discloses a method for asynchronous copy, comprising:

updating indicators in a first structure for one or more blocks of data, wherein each indicator in the first structure indicates whether a corresponding block of data was

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modified at a primary site since the block of data was last sent to remote [Log of Ji stores all write requests, indicating that the block was modified since the block was last sent to remote since write requests are removed from log once the request is transferred to secondary storage (Paragraph 33, Lines 1-5 and Paragraph 54, Lines 14-16)]; and

while copying the blocks of data identified by the indicators in the first structure as having been modified since the blocks of data were last sent to remote storage, updating indicators in a second structure for the one or more blocks of data, wherein each indicator in the second structure indicates whether a corresponding block of data was modified at the primary site while a consistent set of data is being formed [While transferring, new batches are created with updated write requests (Paragraph 40, Lines 1-5 and 8-10, Paragraph 41, Lines 1-3)].

14. As per claim 9, Ji discloses the method of claim 8, further comprising:

after copying a block of data identified by an indicator in the first structure to the remote storage, updating the indicator to indicate that the block of data is synchronized with the remote storage [Once copied, the write request is removed from the log, thus indicating it has been removed (Paragraph 54, Lines 14-16)].

15. As per claim 10, Ji discloses the method of claim 8, further comprising:



after receiving a run command [A run command must exist in order for the system to run (Paragraph 94, Lines 3-5)],

resuming acceptance of write requests from a host (Paragraph 94, Lines 18-22);

updating indicators in the second structure instead of in the first structure [Creating batches, Paragraph 40, Lines 3-5]; and

copying the blocks of data identified by the indicators in the first structure as having been modified since the blocks of data were last sent to remote storage (Paragraph 41, Lines 1-3).

16. As per claims 11-15, please see rejection of claims 1-5 above.
17. As per claims 17-20, please see rejection of claims 7-10 above.
18. As per claims 21-25, please see rejection of claims 1-5 above.
19. As per claims 27-30, please see rejections of 7-10 above.

### ***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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21. Claims 6, 16 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ji as applied to claim 4 above, and further in view of Handy.

22. As per claim 6, Ji discloses the method of claim 4, further comprising:

if modifications to blocks of data are being recorded using the second structure, an indicator corresponding to the block of data is set in the first structure to indicate that the block of data is to be copied, and the block of data does not have a new image in the cache [(Data blocks not having updates (write requests) are copied without being placed within the batches of the second structure],

Ji does not disclose:

allocating a new image for the block of data; and

applying the new write request to the new image.

Handy discloses

allocating a new image for the block of data (Page 72, 4<sup>th</sup> Paragraph);

and

applying the new write request to the new image (Page 72, 4<sup>th</sup> Paragraph).

As per claims 16 and 26 please see rejection of claim 6 above. These claims are rejected for similar reasons

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the allocation of new images of Handy into the system of Ji, since Ji and Handy form the same field of endeavor, namely data transfer and this would allow for adding the necessary data to the data store (Handy, Page 72, 4<sup>th</sup> Paragraph, Lines 1-4).

***Response to Arguments***

23. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Kravets whose telephone number is 571-272-2706. The examiner can normally be reached on Mon-Fri 8-430.

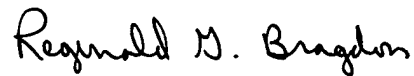
26. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached at 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

27. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Leonid Kravets  
Patent Examiner  
Art Unit 2189

February 23, 2006



REGINALD B. BRAGDON  
PRIMARY EXAMINER